



## Vice President Cheney Visits NASA

Vice President Dick Cheney met with crew members from Expedition Three and Four, as well as Administrator O'Keefe and Deputy Administrator Gregory, during his visit to NASA Headquarters.

Photo credits: NASA/Bill Ingalls

Administrator O'Keefe, Vice President Cheney, Carl Walz and Dan Bursch discussed life on the International Space Station and their record-setting stay over lunch. During Expedition Four's 196 days in space, Flight Engineers Carl Walz and Dan Bursch broke the U.S. space flight endurance record. The previous record was 188 days. Walz also holds the U.S. record for most cumulative time in space with 231 days, and Bursch is second with 227 days.



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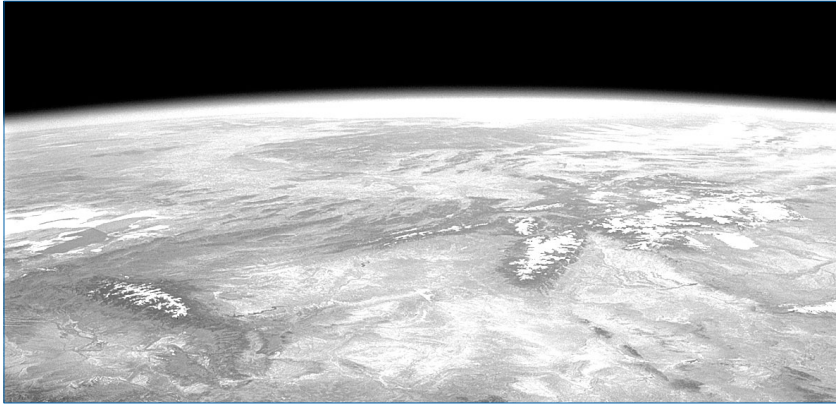
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# Around the Centers



## AMES research center

On Dec. 11 and 12, NASA Ames Research Center will continue its series of events celebrating the "Centennial of Flight" with Aero Expo III. The event is designed to educate and inspire students in grades 5 through 8 as well as their teachers. The theme of this third Ames program is "Future Flight Technologies." Previous events in the series featured the role of women in aviation and the Tuskegee airman. At Aero Expo III, students will engage in hands-on, interactive learning sessions and enjoy demonstrations and displays. They will have the opportunity to take a voyage into the future and learn what is on the horizon in the world of aviation. Over 1,200 students and 200 teachers and assistants from a diverse array of regional schools have already signed up for the onsite event. It is sponsored by the Ames Education Office and NASA's Airspace Systems program. Significant portions of the event will be Webcast to facilitate broader participation and involvement.

## DRYDEN flight research center

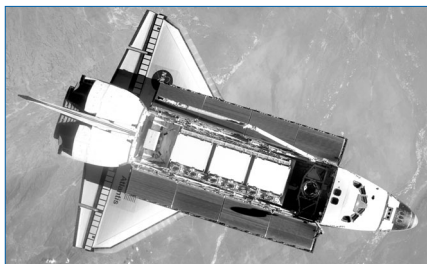
A select group of teachers and their students are benefiting from a unique education partnership between the NASA Dryden Flight Research Center's education office and California State University, Los Angeles. The goal of this education project, entitled "Excellence in Science and Math Education for Hard-to-Staff Urban Schools," is to provide the district schools of Los Angeles County with well-trained, certified science teachers. As part of this program, NASA Dryden hosted these teachers for a workshop Nov. 4-8. The educators were immersed in Dryden's aeronautical and Earth science research through direct interaction with pilots, scientists, engineers and education specialists.

## JET propulsion laboratory

Jet Propulsion Laboratory Director Dr. Charles Elachi was honored in Japan on Nov. 20 as one of the recipients of this year's Takeda Awards. The awards, established last year by the Takeda Foundation, honor individuals who demonstrate outstanding achievements in the creation and application of new engineering knowledge to benefit human needs. Elachi received the award for his work in developing spaceborne radar instruments to monitor the global environment. These instruments flew on Seasat, Magellan and the shuttle imaging radar series (SIR-A, SIR-B, SIR-C and SRTM) and on the Cassini mission to Titan.

## JOHNSON space center

On Oct. 23, His Excellency Jiang Zemin, President of the People's Republic of China, paid a visit to Johnson Space Center (JSC). He was welcomed at JSC's Mission Control Center by Center Director Lt. Gen. Jefferson D. Howell, Jr. The President received a briefing about the Shuttle Mission Control Center by Chief Flight Director Milt Heflin, visited with astronauts and toured training facilities. On the same date, JSC employees observed Safety and Total Health Day. The annual safety awareness event began with a welcome from Center Director Howell. Rainy weather did not dampen employees' enthusiasm as participants listened to guest speakers, visited numerous safety-related booths and enjoyed the fun run/walk at the end of the day.



## LANGLEY research center

The American Red Cross recently recognized Langley Research Center as the largest corporate blood donor in the organization's mid-Atlantic region, which covers Virginia and North Carolina. Langley has participated in Red Cross blood drives every two months for more than 20 years. In Fiscal Year 2001, Langley employees donated 1,206 pints of blood. Since each pint can be used for three "productive units"—plasma, red blood cells and platelets—Langley employees saved or sustained the lives of more than 3,600 people in 2001.

## MARSHALL spaceflight center

More than 1,500 leading scientists, engineers and aerospace industry executives are expected to gather in Huntsville during July 20-23, 2003, for the 39th annual Joint Propulsion Conference, organized by the American Institute of Aeronautics and Astronautics (AIAA). More information can be found at [www.aiaa.org](http://www.aiaa.org). The conference is sponsored by the AIAA, the American Society of Mechanical Engineers, the Society of Automotive Engineers and the American Society for Engineering Education. The Marshall Space Flight Center is cohosting the event.

## STENNIS space center

Engineer Karen Vander of Stennis Space Center began her career with NASA in 1991 through the Agency's cooperative education program. With years of co-op experience and a degree from the University of New Orleans in 1995, she went to work in the A-Complex at Stennis in support of the Space Shuttle Main Engine Program as a mechanical experimental equipment engineer. Vander admits that she had reservations about being accepted as a woman in an area where traditionally only men had worked. But, to her surprise, the transition went smoothly. "You know," said Vander, "everyone on the test stands has a real passion for what they do in support of America's space program, and that commitment soon ended any concerns I had about being accepted as a member of the test team." After working as a test operations engineer on other test programs, Vander transferred to the Propulsion Test Program Office, where today she lends support to the Rocket Propulsion Test Management Board, NASA's decision-making body for the Agency's rocket propulsion testing.



## A Year in Review....

*This past year has been full of exciting challenges and experiences. NASA has continued to make its mark in the history books, and I am enthused about the quality of work and employees at this storied agency. I want to congratulate the entire NASA team for contributing to our significant achievements during this past year, such as:*

- The International Space Station (ISS) complex continued to grow following four Space Shuttle-aided assembly missions. This remarkable research facility also hosted three Expedition Crews, as well as either completed or began work on sixty-five scientific investigations.
- Riccardo Giacconi's NASA-sponsored X-Ray astronomy research was recognized with the Nobel Prize in Physics, and the newly refurbished Hubble Space Telescope continued to revolutionize the field of astronomy.
- NASA celebrated the 40th anniversary of its highly successful Technology Utilization Program, known for assisting the transfer of aerospace technology to the private sector. We also honored Dr. Michael DeBaakey/Johnson Space Center and Glenn Research Center teams for developing our Inventions Of The Year, the Ventricular Assist Device and Hollow Cathode Assembly.
- To engage and inspire the next generation of explorers, Barbara Morgan was announced as NASA's first Educator Mission Specialist. In addition, astronaut Peggy Whitson was designated as the first NASA Science Officer on the ISS.
- NASA scientists discovered several new extra-solar planets, including for the first time, an Earth-like planet orbiting the star 55 Cancri.
- The Mars Odyssey spacecraft discovered evidence of large quantities of water under the surface of the Red Planet.
- Test flights began on the NASA technology effort to develop lighter-weight, flexible-wing aircraft.

*NASA will continue to make historical achievements, and bolstered by our vision and mission goals, we're working on developing new technologies and missions that promise to truly pioneer the future. For all our storied agency's successes, it's clear that the best is yet to come. Happy Holidays!*

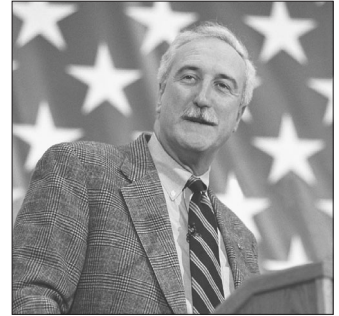


Photo credit: NASA/Renee Bouchard

## NASA Helps NYC Celebrate the Holidays



The ISS Expedition crew, Commander Ken Bowersox, Science Officer Don Pettit and Russian Cosmonaut Nikolai Budarin helped light the Christmas tree at Rockefeller Center in New York.



NBC hosts Al Roker and Ann Curry were joined by Astronaut Pam Melroy, former Astronaut Buzz Aldrin and Astronaut Mike Massimino in Manhattan to help mark the lighting of the 14,000-pound tree, which stands 76 feet tall and 43 feet wide and is adorned with more than 30,000 lights.

Photo credits: NASA/Bill Ingalls

## New Parachute Saves Lives and Planes

The pilot of a small, disabled plane that floated to a safe landing can thank a Minneapolis company and NASA for letting him walk away with nothing more than a stiff neck.

In 1994, NASA's Small Business Innovation Research (SBIR) program awarded Ballistic Recovery Systems (BRS), Inc., of South St. Paul, Minn., an SBIR Phase I contract to develop a "low-cost, lightweight aircraft emergency recovery system."

Eight years later, in October 2002, a pilot released his Cirrus SR-22 aircraft's parachute and landed safely in a Texas Mesquite tree grove. The pilot was uninjured, and there was minimal damage to the plane. This made aviation history as the first emergency application of an airframe parachute on a certified aircraft.

It also became a research and development (R&D) success story between small business and government.

The SBIR program provides an opportunity for small, high-technology companies and research institutions to participate in government-sponsored R&D efforts in key technology areas.

NASA Langley Research Center in Hampton, Va., recommended funding for BRS's SBIR Phase I proposal to develop new, lightweight and strong materials that would allow a parachute to deploy at the speeds required for high-performance general aviation (GA) single-engine planes. It had to be light enough to allow a 60-pound total package weight for the airplane, including the straps that are part of the airplane structure.

"BRS addressed a NASA program need with their innovative solution," said Robert Yang, head of NASA Langley Research Center's Small Business Partnership Team. "The company had an excellent technical proposal and did significant homework in planning for commercial applications."

The first award was in 1994. Phase I awards are in the neighborhood of \$70,000. Two years later, BRS was awarded Phase II funding for continued development of the Parachute Recovery System; these awards are up to \$600,000.



Photo credits: Cirrus Design Corp.

Propelled by a solid fuel rocket motor, the parachute is released from a special opening on top of the fuselage. Three Kevlar webbing straps connect the parachute to the airframe and help guide it through a level descent. BRS says aircraft, pilots and passengers could be saved from altitudes of as little as 300 feet.

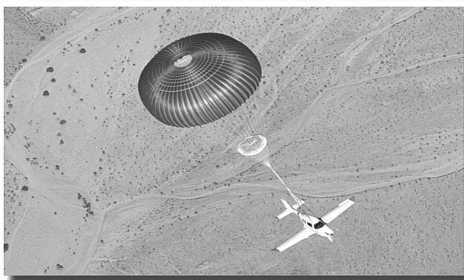
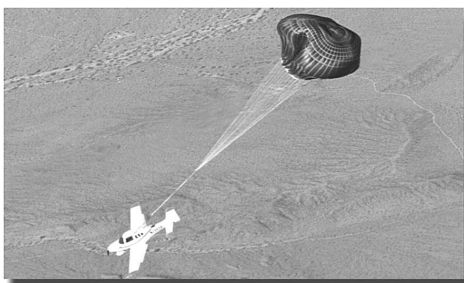
"We hope that this 'save' will have a far-reaching impact on pilots of all aircraft designs," added Thomas. "Making them more aware that there are alternatives when things go wrong and you cannot safely land your airplane."

The BRS Cirrus Airframe Parachute System (CAPS) is included as standard equipment on the Cirrus four-seat SR20 and SR22 aircraft. NASA maintains an SR22 for GA research applications.

"This technology has been successful on many levels," added Yang. "It will be part of the suite of innovations available to SATS (NASA's Small Aircraft Transportation System research program) that have been funded through the SBIR program. BRS has been able to take the concept and spin it back into the NASA's program needs."

BRS has also won 2001 SBIR Phase I and II awards for the development of a larger parachute for the new generation of mini-jets. BRS will also attempt to make this parachute steerable.

"The mini-jet market is one of the most exciting developments in recent aviation history," says Thomas. "This new line of aircraft is going to make affordable personal air travel a reality. The vision of safe air travel by incorporating a whole aircraft recovery parachute system will become possible through the cooperative efforts of NASA and BRS through the SBIR program."





## New Kids on The ISS Block

Meet the new kids on the International Space Station (ISS) block: Expedition Six. There is Ken Bowersox, the Commander. Russian Cosmonaut Nikolai Budarin is the Expedition Six Flight Engineer, and Don Pettit serves as the NASA ISS Science Officer.

The Expedition Six crewmembers took over operations of the orbiting laboratory last month after they arrived aboard Space Shuttle *Endeavour* during the STS-113 mission. Bowersox is a 45-year-old U.S. Navy Captain with four previous Space Shuttle missions under his belt. As the Expedition Six Commander, he is responsible for the overall success of his crew's four-month stay on the ISS.

Forty-nine-year-old Budarin is a veteran Cosmonaut, having served twice as a flight engineer on the Russian Space Station *Mir*. He and Bowersox will carry out Expedition Six's only spacewalk,

which is scheduled for early this month. They will perform a series of tasks on previously delivered hardware for future ISS assembly, including unlatching radiator panels for deployment. The scheduled six-hour spacewalk has a couple of "firsts" associated with it. Budarin will be the first Russian to perform a spacewalk in a U.S. spacesuit during independent ISS operations. This will be the first time the Canadian-built Space Station robotic arm is used to maneuver a spacewalker when a Space Shuttle is undocked to the ISS.

Control of the robotic arm will be the responsibility of the third member of the Expedition Crew, Don Pettit. This will be the 47-year-old astronaut's first space flight. Pettit holds a Ph.D. in chemical engineering and served 12 years as a staff scientist at Los Alamos Scientific Laboratory in New Mexico.

Besides maintaining Space Station operations and spending about two hours a day exercising to maintain their health, the Expedition Six crewmembers will spend more than 240 hours on scientific research. They're expected to conduct about 20 investigations during their stay, with many of the experiments studying the long-term effects of space flight.

The Expedition Six crewmembers should not have to worry about a lot of outside distractions interrupting their research, except for the arrival of a Progress spacecraft in late February filled with supplies. They won't have any other visitors to the ISS until the Space Shuttle *Atlantis* comes to take them home in March.

If you would like more information about Expedition Six, go online [spaceflight.nasa.gov/station/crew/exp6/index.html](http://spaceflight.nasa.gov/station/crew/exp6/index.html)

## Retaking a Lost Position: O'Keefe Returns USMC Flag



Photo credit: NASA/Bill Ingalls

In a small office ceremony at the Pentagon, NASA Administrator Sean O'Keefe returned General Counsel Peter M. Murphy's Marine Corps flag that had been rescued from the rubble at the Pentagon after the September 11 attacks.

Murphy's office was destroyed in the terrorist attack. From Murphy's fourth-floor office, his Marine Corps flag was left hanging above an abyss after portions of the Pentagon collapsed. Workers rescued a gold and scarlet Marine Corps flag that was still standing after the attack.

After the Marine flag was rescued, Murphy kept it in the counsel's temporary offices. Marines made pilgrimages to see it. "It was like an icon," he said. The original flag has since been flown aboard the Space Shuttle and was in the custody of NASA until Monday, November 25.

Now, Murphy's legal office is meticulously restored, right down to his antique wooden desk, which somehow survived. Not long after the attack, Murphy was astonished when Pentagon renovation officials told him he would reoccupy his office before a year had passed.

## Presidential Rank Awards Luncheon



Photo credit: NASA/Renee Bouchard

Each year, the President recognizes and celebrates a small group of career Senior Executives with the President's Rank Award for exceptional longterm accomplishments. Beginning with awards granted in 2003, eligibility for this award is extended to other categories of high-performing senior career employees. Winners of this prestigious award are strong leaders, professionals and scientists who achieve results and consistently demonstrate strength, integrity, industry and a relentless commitment to excellence in public service.

There are two categories of rank awards: Distinguished and Meritorious. Award winners are chosen through a rigorous selection process. They are nominated by their agency heads, evaluated by boards of private citizens and approved by the President. The evaluation criteria focus on leadership and results.

At the Presidential Rank Awards luncheon on November 20, the late Earle K. Huckins III, a longtime NASA manager and former Deputy Associate Administrator for Space Science, was honored posthumously with a 2001 Distinguished Presidential Rank Award. In the photo, Administrator Sean O'Keefe makes a presentation to Huckins' widow Cathy Huckins and his son Brian Huckins.

## Space Flight Awareness Award Honorees

Susan M. Burch (second to the left) and Vickie B. Smith (fourth to the left) received Space Flight Awareness (SFA) Team Awards on September 12 for their contributions as the Aerospace Safety Advisory Panel (ASAP) Support Staff. Award presentations were made by William Readdy, Associate Administrator (Code M) (left), Dave Lengyel Executive Director ASAP (Code Q) (center) and Bryan O'Connor, Associate Administrator (Code Q) (right). Burch and Smith supported the ASAP restaffing process and the implementation of much needed Federal Advisory Committee Act regulations into Panel operations. With these changes, the ASAP will continue to contribute valuable advice and counsel on the safety of NASA crews, workforce, and high-value assets as well as public safety.



Photo credit: NASA/Renee Bouchard



Congratulations to the eight HQ employees honored at the Kennedy Space Center during SFA award activities prior to the launch of STS-112 in October. (l to r): Wing Chan, Code AM; Anthony Cuticchia, Code JX; Lou Becker, Code HK; Yolande Harden, Code HK; Tonya Brown, Code CP; Robert Venezia, Code YO; Andrew Hunter, Code YB; and David Rodgers, Code UP.

# Profiles: NASA Photographers

## — Bill Ingalls

**Current position:** Project Leader and Senior Photographer, CCI, Inc.—Public Affairs, Media Services Division. Manages office with four employees who oversee the creation and distribution of NASA Imagery to the media and publishers worldwide. Serves as senior photographer, photographing everything from VIP visits at NASA Headquarters to rocket launches in Kazakhstan.

**Career history:** NASA Photographer Bill Ingalls has been documenting the U.S. space program since 1989, when he was hired as a contract photo editor, photo researcher and photographer. He has traveled the world photographing missions for NASA. His assignments have taken him from familiar locations, such as the Kennedy Space Center, to the inside of an active volcano in Alaska for the Dante mission; the Oval Office; the inside of a DC-8, flying through a hurricane; the hearing rooms of Capitol Hill; and the brutally cold Kazakh steppes.

Ingalls' photographs have appeared on television and in hundreds of magazines, newspapers and books throughout the world, including *National Geographic*, the *Washington Post*, *George*, *Fortune*, *McCall's*, *People*, *Good Housekeeping* and the *Los Angeles Times*.

Ingalls has worked as a freelance photographer and taught television production and photography at the college level. He is a graduate of Waynesburg College, Pa., with degrees in visual

communications and English. Ingalls was raised in Pittsburgh, Pa., and is the father of 17-year-old Sarah.

**Activities/hobbies:** Photography (freelance work), desktop publishing, digital video editing, bicycling, hiking, camping, movies, and road trips in his MINI Cooper.



Photo Credit: NASA/Ron Hoffman

## — Renee Bouchard

**Current position:** NASA HQ Contract Photographer and Picture Editor through CCI, Inc., providing support to Headquarters through photography, editing NASA Imagery for the NASA Photo Archive and researching editorial requests.

**Career history:** I am fortunate to have photography as both my vocation and avocation. I have worked as a photographer since age 16. I graduated from the Rochester Institute of Technology with a degree in photo science and photo illustration/photo journalism. John G. Morris worked to groom my editing skills and George Tames, friend and photographer for the *New York Times*, taught me to photograph the people of Washington. My work has been seen in *NewsDay*, the *New York Times*, *AP*, *UPI*, the *New York Daily News* and many corporate and nonprofit annual reports. My passion for photography, people and politics makes my work in Washington a true pleasure.

**Describe your family:** David and I have been married for seven years and have a beautiful, spirited 5-year-old daughter named Elise. My parents settled in Washington, D.C. in the 50s and had full-time careers while raising three children. My mother,

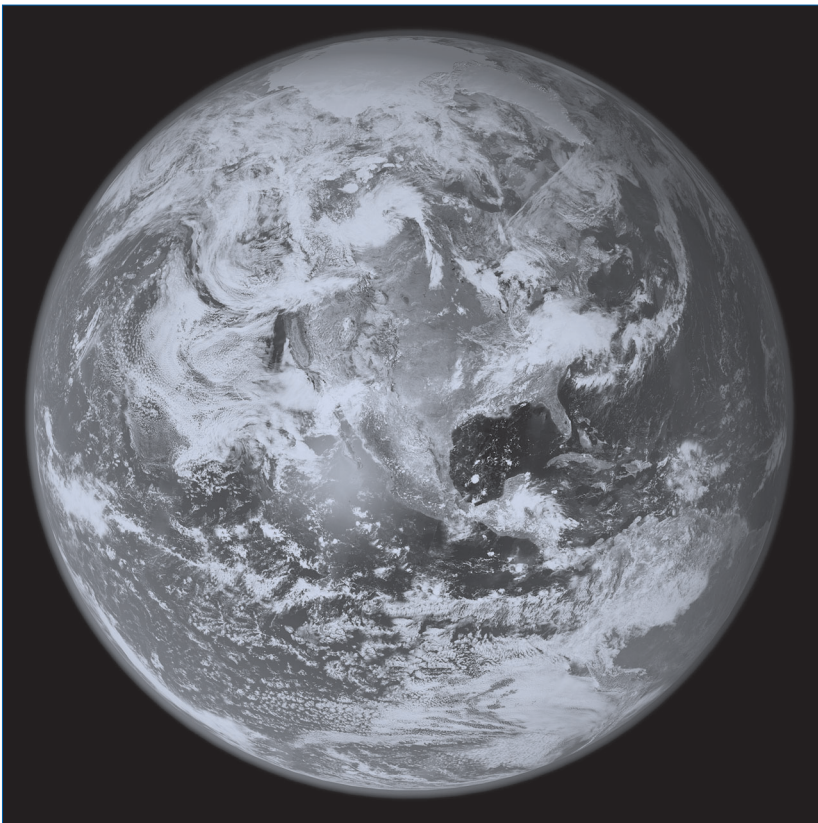
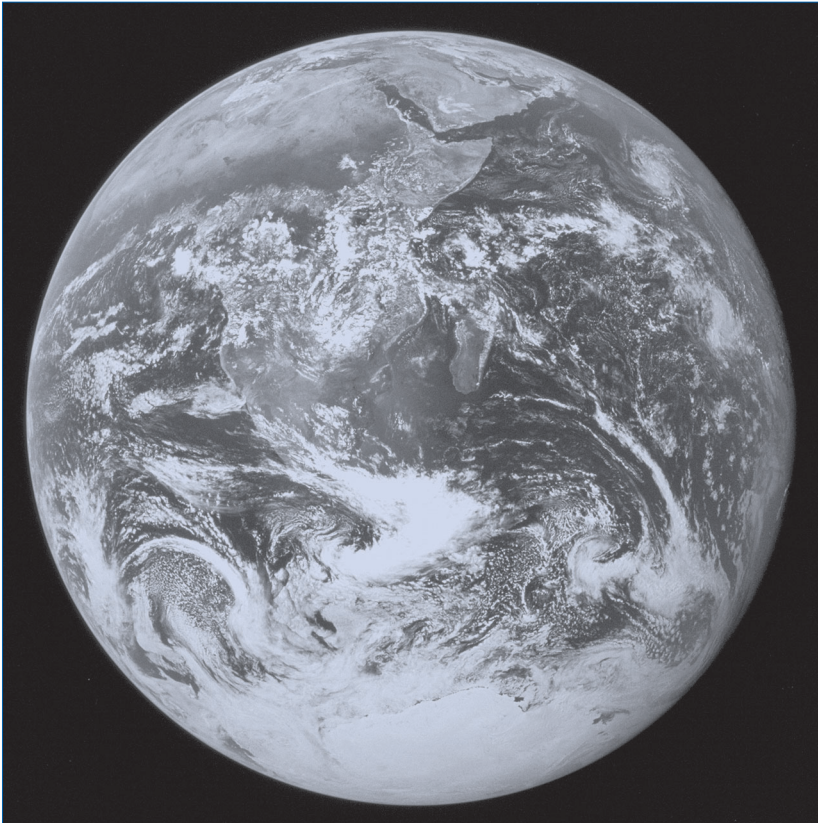
one of eight children, is a retired nurse practitioner, specializing in obstetrics. My father, one of 13 children, was in the 8th Air Force retiring at the Pentagon. My brother lives in Tennessee, and my sister is an attorney for the State of Maryland.

**Activities/hobbies:** Downhill skiing, hiking and plenty of beach time.

**Who is the person you admire the most:** Photographically—portrait photographer Arnold Newman for remaining true to his craft and ideals, photojournalist Eugene Smith, photographer and personality George Tames and photo environmentalist Ansel Adams. Personally—My dad, for although a POW for 17 months, his faith in mankind, his kindness and trust in others never wavered.



## 30th Anniversary of the Famous Blue Marble Photograph



December 7 marks the 30th anniversary of what may be the most famous and breathtaking photo ever taken. This shot of the Earth, taken by the astronauts of Apollo 17, the sixth and last crew to land on the moon, changed forever the way humankind thinks of Earth. This first full Earth view is commonly referred to as the Blue Marble.

The photo was taken from the command module at about 28,000 statute miles away from Earth with a 70-mm Hasselblad electric camera. Virtually every picture showing the full Earth is derived from this one photograph. Television, newspapers, Web sites and marketing material all use this photograph, but few people notice that it is the same one.

In 2000, the Laboratory for Atmospheres at NASA's Goddard Space Flight Center, Greenbelt, Md., used data from three different Earth-observing satellite instruments and the latest technology to assemble an image that recreates the visceral impact of viewing Earth from space with human eyes. Blue Marble 2000 is a digital image, a combination of science, engineering and artistry. The Laboratory created an even more complete and detailed Blue Marble image in 2002.

In spite of the many other photos of the full Earth available today from a myriad of spacecraft, the original Apollo 17 photo still ranks number one in request popularity.

For more details, see  
[rsd.gsfc.nasa.gov/rsd/bluemarble/](http://rsd.gsfc.nasa.gov/rsd/bluemarble/)

(Top) The original Blue Marble photo taken by the crew of Apollo 17 in 1972. (Below) The detailed Blue Marble image created in 2002 by the Laboratory for Atmospheres at the Goddard Space Flight Center.



## ISS Crew Captures High-Resolution Glacier Imagery

Russian researchers are studying images taken by the crew of the International Space Station to better understand the catastrophic glacier collapse and landslide that occurred on the northern slope of Mount Kazbek in September—information that may help us better understand our home planet.

On Sept. 20, 2002, the collapse of a hanging glacier on the slope of Mount Dzhimarai-Khokh onto the Kolka glacier on Mount Kazbek triggered an avalanche of ice and debris that buried several small villages in the Russian Republic of North Ossetia. The avalanche killed dozens of people. Glacial debris dammed rivers and formed several lakes. One of these lakes flooded a village, and others are threatening to burst their new banks and form debris flows downstream.

Russian scientists at Moscow State University are using images taken by the crew aboard the station to measure small changes near the glacier. “We can see a slight increase in the area of a new lake near the Kolka Glacier terminus,” said Dr. Olga Tutubalina, a scientist at Moscow State University. “We first sighted this lake during our field trip on Oct. 5, and the lake surface has increased from Oct. 6 to 19. It is potentially dangerous, because it can produce disastrous outburst mudflows,” she said.

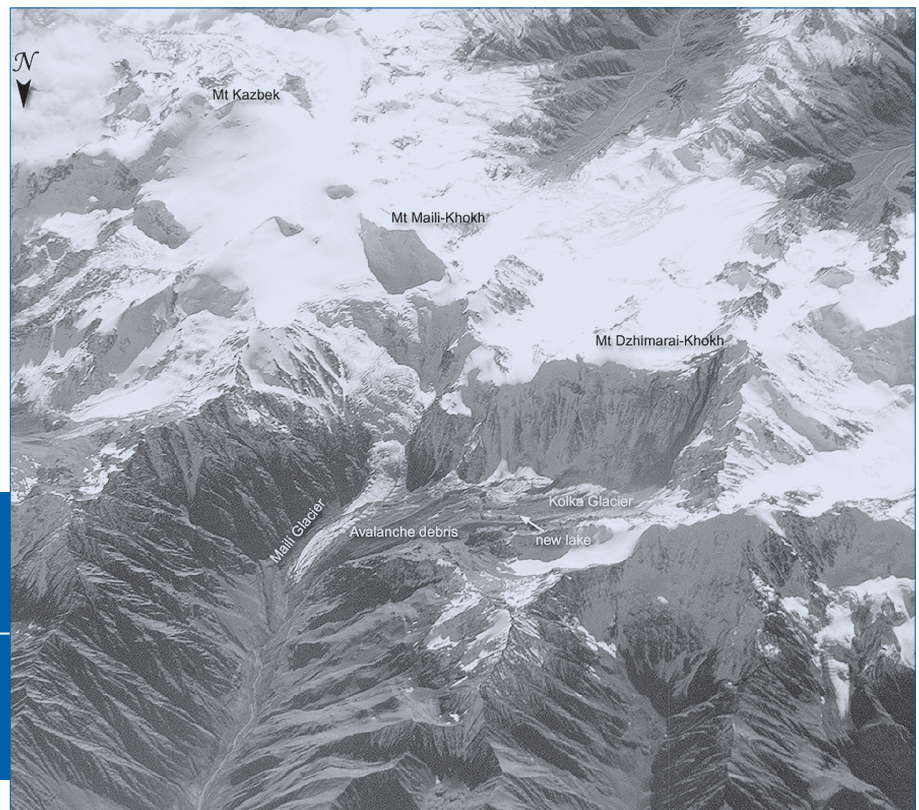
The Russian investigators also include Moscow State University scientists Dr. Dmitry Petrakov, Dr. Victor Popovnin and Sergei Chernomorets. The Russian Foundation for Basic Research supports their activities. In September 2001, the team visited the Kolka Glacier to assess its state. After the recent collapse, the team conducted an analysis of images taken by the station crew and then organized another field trip to gather additional information.

Dr. Lev Dessinov of the Russian Academy of Sciences collaborated with scientists at NASA’s Johnson Space Center, Houston, to establish global glacier sites as a research topic for the Crew Earth Observations project. Dessinov was

also part of the team of scientists called to the Kolka area immediately after the glacier collapsed. “We collected a lot of information and [NASA astronaut photographs] were one of our main data sources,” Dessinov said.

The Expedition Five crew, Commander Valery Korzun, Flight Engineer Sergei Treshev and NASA Station Science Officer Peggy Whitson, have been photographing this area since the beginning of the mission in June as part of the Russian URAGAN and U.S. Crew Earth Observations projects, which are studying changes in the world’s glaciers. On Aug. 13, about one month before the glacier collapsed, the crew photographed the mountain. Although scientists have predicted the possibility of large glacial collapses, at the time of the first image, no one predicted that tragedy would strike the mountain village of Karmadon a little more than a month later. On a visit to the station, Shuttle crewmembers photographed the aftermath of the collapse on Oct. 17. Station crewmembers then took a spectacular three-dimensional oblique image on Oct. 19.

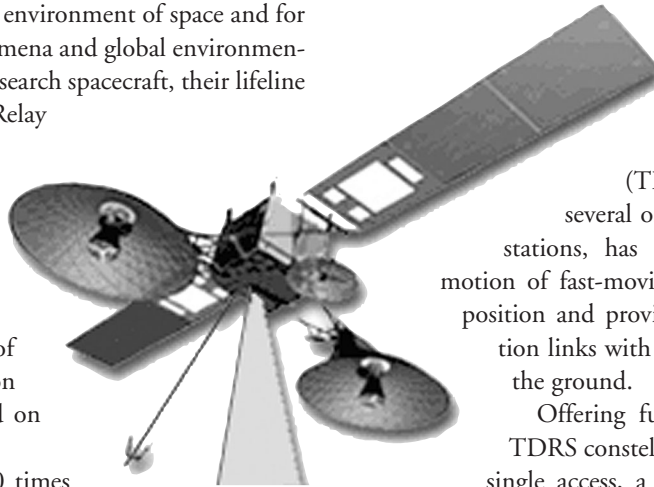
The photographs of the Kolka glacier are on the Internet at  
[www.jsc.nasa.gov/images/eol/kolka.html](http://www.jsc.nasa.gov/images/eol/kolka.html)



## Ready to Reach Out and Touch Someone

For those who work in the unique environment of space and for scientists analyzing celestial phenomena and global environmental data from more than a dozen research spacecraft, their lifeline is NASA's Tracking and Data Relay Satellites (TDRS). NASA is set to launch a third advanced communication satellite called TDRS-J in December aboard an Atlas IIA rocket from Cape Canaveral Air Force Station, Fla. NASA launched TDRS-H, the first of three replenishment satellites, on June 30, 2000. TDRS-I launched on March 8, 2002.

Transferring data at rates 5,000 times faster than the average 56K computer modem, the new trio of satellites will join forces with the original TDRS constellation to support the Space Shuttle, Hubble Space Telescope and a host of other spacecraft, with near-real-time audio and high-resolution digital video, as well as provide tracking services for expendable launch vehicles. Information relayed via TDRS is helping scientists unravel the mysteries of black holes, the birth of stars, and the very beginning of the universe; it also provides clues to help us understand the total Earth system.



TDRS-J will be deployed into a 22,300-mile-high "geosynchronous" orbit in a fixed position above Earth. The Tracking and Data Relay Satellite System (TDRSS), which consists of a fleet of several onorbit satellites and various ground stations, has the unique ability to follow the motion of fast-moving satellites, determine their exact position and provide nearly continuous communication links with controllers and researchers back on the ground.

Offering full compatibility with the original TDRS constellation, TDRS-J also boasts Ka-band single access, a new and higher frequency service that provides the capability to increase data rates to 800 megabits per second for future missions with higher bandwidth communication needs. The satellite also features two innovative 15-foot graphite mesh antennas. Folded into a "taco" shape for launch, each antenna springs back into its original shape on orbit, providing users with five return channels and one multiple access forward channel.

Boeing Satellite Systems of El Segundo, Calif., designed, built and tested TDRS-H, I and J for NASA under a fixed-price contract.

## Hubble Images for the Blind

A new book of majestic images taken by NASA's Hubble Space Telescope (HST) brings the wonders of our universe to the fingertips and minds of the blind.

Called *Touch the Universe: A NASA Braille Book of Astronomy*, the book is the first to combine color images of planets, galaxies and nebulae with clear plastic overlays embossed with lines, bumps, and other textures. The raised patterns translate colors, shapes and other intricate details of the cosmic objects, allowing visually impaired people to feel what they cannot see. Braille and large-print descriptions accompany each of the book's 16 photographs.

"I think that this book will help the blind community understand what the objects are in space," explains the book's author, Noreen Grice, operations coordinator for the Charles Hayden Planetarium at the Boston Museum of Science. "These objects are beyond their touch, but this book can bring them to their fingertips. The book can help the blind understand their place within the universe and how the universe is structured."

NASA helped fund the 64-page book, which is now available for \$35.

"For the last twelve years, Hubble discoveries have not only rewritten the science textbooks, but also the stunning images from HST have become a

part of American culture. But while these images have wowed the world, until now, there was still one group—the blind—that could not share in this marvel," said Ed Weiler, Associate Administrator for Space Science. "Now, thanks to this extraordinary new book, Hubble images are literally in the hands of those who could not experience the beauty of the cosmos before."

The book was the invention of Bernhard Beck-Winchatz, an astronomer at DePaul University in Chicago, Ill. Beck-Winchatz got the idea when he won a \$10,000 Hubble Space Telescope grant earmarked for educational programs.



## Administrator Addresses Freedom to Manage Agency Reps

**“The Freedom to Manage initiative gives employees empowerment . . . it is an opportunity to be proactive,” O’Keefe stated.**

The Freedom to Manage (F2M) Task Force and Agency Representatives met at Headquarters on October 31. The purpose of the workshop was for F2M team members to come together and “work down” more of the work impediments identified by NASA employees. NASA Administrator Sean O’Keefe addressed the workshop attendees and presented the “Freedom to Manage Award of Merit” to F2M Task Force team members individually. O’Keefe stated, “The Freedom to Manage initiative gives employees empowerment . . . it is an opportunity to be proactive and it is motivating employees to take action.”

Just before the “working” lunch session began, Mark Everson, OMB Deputy Director for Management, presented a candid overview of the implementation of the President’s Management Agenda (PMA) at the federal level. Everson was extremely complimentary of NASA’s pathfinding efforts toward implementing the PMA.

For more information on F2M activities, visit the F2M Web site at [f2m.nasa.gov](http://f2m.nasa.gov)



Photo credit: NASA/Renee Bouchard

### Some Key Business

#### Surveys, Audits and Reviews (SAR):

The final recommendations of the SAR Tiger Team (led by Sue Garman) were provided at the workshop with follow-on action to NASA senior management to implement the recommendations. Garman presented the findings at the Enterprise Committee ViTS on November 12.

#### Outsourcing Desktop Initiative for NASA (ODIN):

Agreed on both a near-term and a long-term strategy to address employee concerns regarding desktop computing services.

- Procurement will work with Goddard Space Flight Center to ensure that the priority on customer service metrics is increased in the current contract extensions (delivery orders)
- There is an expectation that the to-be-created Consolidated Business Services Office will eventually have responsibility for ODIN Agencywide.

#### National Research Council Resident Research Associateship (NRC RRA):

Taken positive steps to improve and coordinate the process for managing and selecting guest researchers under the NRC RRA.

- NRC conducts the program for NASA and 25 other agencies; NASA has a contract with NRC.
- Involves 250 associates per year, competitively selected.
- Issues involved variations in the allocation and review process and length of time to bring associates on board.

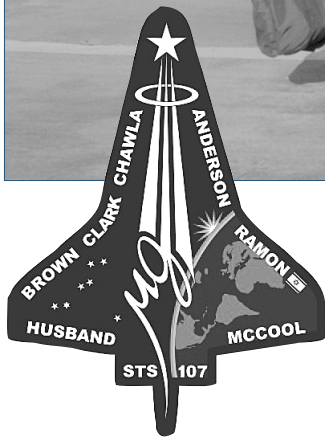
#### Also addressed a variety of other items, including the following:

- Status of Financial Management issues including a) fund source flexibility, b) OMB reporting requirements, c) appropriateness of funding metrics and others.
- Records management policy.
- Legal jurisdiction issue at several Centers.
- Review of functional initiatives process.
- GPRA metrics for crosscutting processes.



Photo credit: NASA/Renee Bouchard

# STS-107: 24/7 Space Science Research



Scheduled for a launch in January 2003, Space Shuttle mission STS-107, the 28th flight of the Space Shuttle *Columbia* and the 111th shuttle mission to date, will give more than 70 international scientists access to both the micro-gravity environment of space and a set of seven human researchers for 16 uninterrupted days.

*Columbia's* 16-day mission is dedicated to a mixed complement of competitively selected and commercially sponsored research in the space, life and physical sciences. An international crew of seven, including the first Israeli astronaut, will work 24 hours a day in two alternating shifts to carry out experiments in the areas of astronaut health and safety, advanced technology development, and Earth and space sciences.

When *Columbia* is launched from Kennedy Space Center's launch pad, it will carry a SPACEHAB Research Double Module (RDM) in its payload bay. The RDM is a pressurized environment that is accessible to the crew while in orbit via a tunnel from the shuttle's middeck. Together, the RDM and the middeck will accommodate the majority of the mission's payloads/experiments. STS-107 marks the first flight of the RDM, though SPACEHAB Modules and Cargo Carriers have flown on 17 previous Space Shuttle missions.

Astronaut Rick Husband (Colonel, USAF) will command STS-107 and will be joined on *Columbia's* flight

deck by pilot William "Willie" McCool (Commander, USN). *Columbia* will be crewed by Mission Specialist 2 (Flight Engineer) Kalpana Chawla (Ph.D.), Mission Specialist 3 (Payload Commander) Michael Anderson (Lieutenant Colonel, USAF), Mission Specialist 1 David Brown (Captain, USN), Mission Specialist 4 Laurel Clark (Commander, USN) and Payload Specialist 1 Ilan Ramon (Colonel, Israeli Air Force), the first Israeli astronaut.

The seven crewmembers will work in two shifts throughout their 16 days in space. They will work round the clock to complete a multidisciplinary research program involving 32 payloads with 59 separate investigations. Experiments in the SPACEHAB RDM include nine commercial payloads involving 21 separate investigations, four payloads for the European Space Agency with 14 investigations, one payload/investigation for ISS Risk Mitigation and 18 payloads supporting 23 investigations for NASA's Office of Biological and Physical Research (OBPR).

Space Shuttle *Columbia* and its seven-member crew are slated to launch no earlier than Jan. 16, 2003, to begin STS-107—a mission dedicated to research.

The launch dates for STS-107, STS-112 and STS-113 were moved to accommodate repair work on the Shuttle Crawler Transporters.

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